Installation

This section describes installation procedures for Natural ISPF under the operating systems MVS (including OS/390), VSE/ESA, VM/CMS and BS2000/OSD.

Warning:
If you are migrating from a previous version of Natural ISPF, **be sure** to refer to the section Migrating from Previous Versions.

This section covers the following topics:

Installation Jobs

The installation of Software AG products is performed by installation **jobs**. These jobs are either created ’manually’ or generated by System Maintenance Aid (SMA).

For each step of the installation procedure described in this documentation, the job number of a job performing the corresponding task is indicated. This job number refers to an installation job generated by SMA. If you are not using SMA, an example installation job of the same number is provided in the installation job library on the Natural ISPF installation tape; you must adapt this example job to your requirements. Note that the installation job numbers on the tape are preceded by a product code (for example, ISPI061).

Using System Maintenance Aid

Information on using Software AG's System Maintenance Aid (SMA) for the installation process is provided by the System Maintenance Aid documentation.

Prerequisites

The following Software AG products must be installed at your site as a prerequisite for Natural ISPF:

- Natural Version 3.1.2 or higher, including the Software AG Editor.
- Entire System Server (formerly Natural Process) (optional):

All platforms: Version 2.2 or higher.

- If VSAM files are used: Natural VSAM Version 2.4.4 or higher (optional).
- For an initial installation using Adabas system files, Adabas Version 6.2 or higher is required.
- If Predict is installed, Version 3.4 or higher is required.

Contents of the Installation Tape

The installation tape contains the following files:

OS/390 Tape:

Tape file name	Disk cylinders	Disk type	Description
ISPnnn.JOBS	1	3380	Natural ISPF installation jobs
ISPnnn.INPL	24	3380	Natural ISPF programs
ISPnnn.ERRN	1	3380	Natural ISPF error messages
ISPnnn.LOAD	1	3380	Natural ISPF load modules
ISPnnn.SRCE	1	3380	Natural ISPF sources and examples
ISPnnn.SYS1	1	3380	Natural ISPF empty versioning file
ISPnnn.SYS2	1	3380	Natural ISPF empty container file
ISPnnn.DATA	1	3380	Natural ISPF Predict file descriptions
ISPnnn.VINI	1	3380	Natural ISPF VSAM init file

VSE/ESA Tape:

Tape file name	Disk cylinders	Disk type	Description
ISPnnn.INPL	24	3380	Natural ISPF programs
ISPnnn.ERRN	1	3380	Natural ISPF error messages
ISPnnn.LIBR	1	3380	Natural ISPF sources, jobs (including installation jobs, load modules)
ISPnnn.SYS1	1	3380	Natural ISPF empty versioning file
ISPnnn.SYS2	1	3380	Natural ISPF empty container file
ISPnnn.DATA	1	3380	Natural ISPF Predict file descriptions
ISPnnn.VINI	1	3380	Natural ISPF VSAM init file

CMS Tape:

Tape file name	Disk cylinders	Disk type	Description
ISPnnn.INPL	24	3380	Natural ISPF programs
ISPnnn.ERRN	1	3380	Natural ISPF error messages
ISPnnn.TAPE	1	3380	Natural ISPF sources, jobs, load modules
ISPnnn.DATA	1	3380	Natural ISPF Predict file descriptions

BS2000/OSD Tape:

Tape file name	Disk cylinders	Description
ISPnnn.ERRN	192	error messages
ISPnnn.JOBS	192	installation jobs
ISPnnn.INPL	7800	programs
ISPnnn.PAMS	27	load modules
ISPnnn.SYS1	33	empty versioning file
ISPnnn.SYS2	33	empty container file
ISPnnn.DATA	96	Predict file descriptions

Migrating from Previous Versions

Migrating Version Data

As of Natural ISPF Version 2.3 a new logical format of the versions file is used. No Adabas FDT or VSAM structure must be changed. Migration has to be done within the file. Any upgrade from a version below 2.3.1 requires migration. No migration is required if Natural ISPF is upgraded from Version 2.3.1, 2.4.1 or 2.4.2.

Migration can be done with SMA Job I200 Step 2005. At startup time, Natural ISPF checks for old version records. If migration has not executed or only in part, versioning is disabled.

See installation Step 11: Loading / Migrating the Natural ISPF Versions File for details.

Important Aspects of the Installation Procedure

1. Check whether you have used any Natural ISPF exits which were loaded into library SYSISPX. If this is the case, you must make sure that your modified source is copied to another library. If you have not already done so, do it before installing the new version, since an INPL of Natural ISPF overwrites all programs in SYSISPX.
2. Before installing the new version, you must delete some existing programs and data. Delete the following:

Library Name	**Programs**
SYSLIB	All objects with prefix IS (IS*) and SAT (SAT*). These must be deleted online.
SYSISPS1	All members (*). Job I051, Step 2000 can be used to delete this library in batch mode (or Step 2001 for VSAM system files).

3. Some internal data structures have been changed in Version 2, compared with earlier versions. In particular, the field SESSION-DATA has been extended from 128 to 200 bytes. This field is used in some of the user exits as well as in Open NSPF subprograms which implement new objects. Here the field is called OPERATION-DATA.

If Natural ISPF must not be executed without your user exits (e.g. because of user authorization which is checked in exits), the following sequence of steps is recommended:

- **When migrating from versions lower than 2.1.1:**
  1. Load system programs and error messages as described in this documentation. Natural ISPF will not be available for anyone until successful completion of the installation process.
  2. Adapt your user exits, Open NSPF subprograms and workfile usage.
  3. Continue the installation as described in this documentation.
- **When migrating from Version 2.1.1 or 2.1.2:**

  The relevant internal data structures have not changed since Version 2.1.1. Therefore, no modifications of your user exits and other subprograms are necessary. If all your user exits, Open NSPF subprograms and workfile-accessing exits reside in the same library, these will be copied to the library SYSLIB by the INSTALL program (see Step 14). Otherwise, you must copy them to SYSLIB manually after performing the INPL (see Step 2).

Migrating from Versions Lower Than 2.1.1

Adapting User Exits

All fields from previous Natural ISPF versions can still be found in the SESSION-DATA and all data areas which contain the object-specific redefinition of SESSION-DATA, but the field offsets may have changed and new fields have been added.

Assuming your exit sources are stored in library SYSISPXU, you must perform the following steps to adapt your exits:

1. Delete all data areas with names like ISxx---L from the library SYSISPXU.
2. If Natural Security is installed in your environment, define SYSISPX as STEPLIB for library SYSISPXU. Otherwise, copy all parameter data areas with names like ISxx---L from library SYSISPX to library SYSISPXU.
3. Change field SESSION-DATA to the new format and length (A200). You can use the Natural Scan/Replace utility for this function.

4. Recompile your exits.
5. Copy to SYSLIB will be performed by the INSTALL program (see Step 14: Required Interfaces to other Software AG Products).

Adapting Open NSPF Subprograms

If you have used Open NSPF to implement user defined objects, you must perform the following steps to adapt your subprograms:

1. Change field OPERATION-DATA to the new format and length (A200).
2. Recompile your subprogram.
3. Copy the compiled subprogram to library SYSLIB.

Workfile Usage

Export/Import PC was using Workfile 5 for PC access. This has been changed to Workfile 7. If another workfile is needed at your site, modify the following exits accordingly:

```
ISP-DLBU ISP-SECU
  ISP-SEPU ISP-SE2U ISP-SE3U ISP-SE4U
  ISP-SIMU ISP-UPBU
```

When you have finished, recompile your exists and copy them to the library SYSLIB.

Adapting Menu Definitions

Note:
This procedure can also be performed after installation of Natural ISPF.

The menu structure has been changed to incorporate new functions and objects. If you have modified any of the menus in the list below, you should apply the changes to the new menus distributed by Software AG:

ALL, MAIN, CNFG, PROF, ADMN

To integrate your changes, proceed as follows:

1. LIST all menus (direct command LIST MENU *****).
2. If any of above mentioned menus is of type USER, continue and repeat for each menu:
   - COPY the menu **x** temporarily to another library, you can use the command COPY NAT SYSISPFU(MENUx), ...
   - DELETE the menu of type user from the list. This reactivates the menu supplied by Software AG.
   - EDIT the menu and integrate your changes.

Further Aspects

- The Global Data area used by Natural ISPF has been extended by 1600 bytes. If you were editing Natural programs which are very close to the ESIZE limit, increase the parameter ESIZE by 2K.
- Usually Natural ISPF Entry Panels contain the data which was entered when the Entry Panel was last used. Since the structure of the data has been changed, data created by versions prior to Version 2.1.1 is ignored and the Entry Panel is empty when it is invoked for the first time.
- Incore database container record formats have been changed. This change is upwardly compatible, i.e. new IDB programs can read old data, but container files written by new IDB programs cannot be retrieved by old IDB programs delivered with Natural ISPF version 1.4.x (an attempt to do so would cause message texts like Invalid Format or Object not found to be displayed). This may happen if you have two different environments accessing the same container file. For this reason, if you intend to use old and new versions in parallel, you are advised to create and use a separate container file for the new environment.

Step 1: Copying the Tape Contents to Disk

To load the Natural ISPF installation tape, proceed as follows:

For OS/390:

If you are using System Maintenance Aid (SMA), refer to the SMA documentation (included on the current edition of the Natural documentation CD).

If you are not using SMA: Follow the instructions below.

This section explains how to:

- Copy data set COPY.JOB from tape to disk.
- Modify this data set to conform with your local naming conventions.

The JCL in this data set is then used to copy all data sets from tape to disk. After that, you will have to perform the individual install procedure for each component.

Step 1 - Copy data set COPY.JOB from tape to disk

The data set COPY.JOB (label 2) contains the JCL to unload all other existing data sets from tape to disk. To unload COPY.JOB, use the following sample JCL:

```
//SAGTAPE JOB SAG,CLASS=1,MSGCLASS=X
//* --------------------------------
//COPY EXEC PGM=IEBGENER
//SYSUT1 DD DSN=COPY.JOB,
// DISP=(OLD,PASS),
// UNIT=(CASS,,DEFER),
// VOL=(,RETAIN,SER=<Tnnnnn>),
// LABEL=(2,SL)
//SYSUT2 DD DSN=<hilev>.COPY.JOB,
// DISP=(NEW,CATLG,DELETE),
// UNIT=3390,VOL=SER=<vvvvvv>,
// SPACE=(TRK,(1,1),RLSE),
// DCB=*.SYSUT1
//SYSPRINT DD SYSOUT=*
//SYSIN DD DUMMY
//
```

Where:

<*hilev*>	is a valid high level qualifier
<*Tnnnnn*>	is the tape number
<*vvvvvv*>	is the desired volser

Step 2 - Modify COPY.JOB to conform with your local naming conventions

There are three parameters you have to set before you can submit this job:

- Set HILEV to a valid high level qualifier.
- Set LOCATION to a storage location.
- Set EXPDT to a valid expiration date.

Step 3 - Submit COPY.JOB

Submit COPY.JOB to unload all other data sets from the tape to your disk.

For VSE/ESA:

The sample JCS supplied on tape for the installation of Natural ISPF assumes one library (SAGLIB).

Copy the sublibrary containing the sample installation jobs from tape using the following JCS:

```
* $$ JOB JNM=RESTORE,CLASS=0,DISP=D,LDEST=*
  * $$ LST CLASS=A,DISP=D
  // JOB RESTORE
  // ASSGN SYS005,IGN
  // ASSGN SYS006,CUU,VOL=xxxxxx
  // MTC REW,SYS006
  // MTC FSF,SYS006,nn                 * For the value of nn, see the tape report
  * *** Now process ISPnnnJ.LIBR - JOBS ***
  // EXEC LIBR,PARM='MSHP'
   RESTORE SUB=SAGLIB.ISPnnn:SAGLIB.ISPnnn -
           SAGLIB.ISPnnnJ:SAGLIB.ISPnnnJ -
           TAPE=SYS006 -
           LIST=YES -
           REPLACE=YES
  /*
  /&
  * $$ EOJ
```

For CMS:

1. To position the tape for the TAPE LOAD command, calculate the number of tape marks as follows: if the sequence number of ISPnnn.TAPE, as shown by the Report of Tape Creation, is *n*, you must position over 3*n*-2 tape marks (that is, FSF 1 for the first data set, FSF 4 for the second, etc.).
2. Access the disk that is to contain the Natural ISPF installation files as Disk A. The size of the disk should be at least 500 1-KB blocks, for example, 2 cylinders on 3330-type disks, or 1 cylinder on 3350- or 3380-type disks.
3. Ask the system operator to attach a tape drive to your virtual machine at address X'181' and mount the Natural ISPF installation tape.
4. Position the tape by issuing the CMS command:

   ```
   TAPE FSF fsfs
   ```

   where fsfs is calculated as described above.

   Load the Natural ISPF/CMS installation material by issuing the CMS command:

   ```
   TAPE LOAD * * A
   ```

   You may wish to keep the tape drive attached to your virtual machine, because the tape will still be needed in further steps of the installation procedure.

For BS2000/OSD:

If you are not using SMA, copy the data sets from tape to disk using the procedure described below. In this procedure, the following values must be supplied:

- In the data set names, replace *nnn* with the current version number of the data sets.
- Replace all *xxxxxx* with the volume serial number of the tape.

Step 1

Copy the job data set ISP*nnn*.JOBS from tape to disk using the BS2000/OSD utility PERCON or EDT.

If you use PERCON, issue the following commands:

```
/FILE ISPnnn.JOBS,VOL=xxxxxx,DEV=T9G -
  /     ,BLKSIZE=,RECSIZE=,RECFORM=,FCBTYPE= -
  /     ,STATE=FOREIGN,FSEQ=???,LINK=PCIN
  /FILE P.ISPnnn,LINK=PCOUT
  /EXEC PERCON
  END
```

If you use EDT, issue the following commands:

```
/FILE ISPnnn.JOBS,VOL=xxxxxx,DEV=T9G -
  /     ,BLKSIZE=,RECSIZE=,RECFORM= -
  /     ,STATE=FOREIGN,FSEQ=???,LINK=EDTSAM
  /EXEC EDT
  @ READ '/'
  @ SY '/REL EDTSAM'
  @ WRITE 'P.ISPnnn'
  @ HALT
```

Step 2

Then issue the following command:

```
/CALL P.ISPnnn,PRODUCT=ISPnnn
```

An example job library LIB.ISP*nnn* is created from the procedure data set.

Step 3

Adapt job E.ISPTAPE from the example job library.

Then issue the following command to run the job, which copies all data sets from tape to disk:

```
/E LIB.ISPnnn(E.ISPTAPE)
```

Step 2: Loading System Programs and Error Messages

Load files ISP*nnn*.INPL and ISP*nnn*.ERRN. They load the following Natural libraries:

Natural Libraries	Description
SYSLIB	Natural ISPF Programs
SYSISPE	Natural ISPF Examples
SYSISPH1	Natural ISPF Help Data
SYSISPS1	Natural ISPF Internal Menus/Tables
SYSISPX	Natural ISPF User Exit Sources
SYSISPXC	Natural ISPF Exit Sources for Com-plete
SYSERR	Natural ISPF Error Messages
SYSISPI	Natural ISPF Interfaces
SYSISPDB	Natural ISPF Incore Database Modules
SYSLIBS	Natural ISPF Incore Database Modules

For OS/390, VSE/ESA, BS2000/OSD - Job I061

Load the files using Job I061, Steps 2000 (INPL) and 2001 (ERRN).

For CMS

Load the files by running the procedure ISPINPL EXEC.

Note for All Platforms

While the above job is running, Return Code 5500 or 828 may be issued. This is because security entries are made, and the job name may not be authorized to make all entries at your site. If this happens, run program INTISPS1 in library SYSTEM in Online Natural to ensure all security entries are made.

Step 3: Applying Problem Solutions

Note:
This step is not needed for Natural ISPF 2.4.3 and 2.4.4.

Step 4: Loading Predict Data

Note:
This step must be skipped if you are using a Natural VSAM system file.

All Natural ISPF files used in Incore Database examples are documented in Software AG’s repository Predict. The ISPnnn.DATA data set on the installation tape contains these Predict data that can be loaded with the MIGRATE utility in Predict. This is optional.

You can omit this step if you have already loaded the Predict data during a preceding installation of Natural ISPF Version 2.x.x, since there are no differences between the Predict data delivered with Versions 2.1, 2.3 and 2.4.

The MIGRATE utility is described in the Predict Reference Documentation. Use Job I200, Step 2000 to load the file.

Note:
The Predict MIGRATE utility may issue warning message IC2629, indicating that different fields are using the same Adabas short names. You can ignore this message. You can also ignore the message: Attribute OPSYS lost.

For CMS

Modify ISPDATA to suit your environment and run the ISPDATA EXEC.

Step 5: Modifying Natural Front-end Modules - BS2000/OSD only: Job I070

Front-end Requirements

There are no special requirements for the Natural TIAM driver (ANRTFRNT). However, it is recommended that you use the following definitions:

Definition	Description
CURPRO=ON	This is the default.
PFK=KN	Recommended if all connected terminals are type 9756 or above.
PFK=KS	Recommended in all other cases.

See also the section Setting the Dynamic Natural Parameters.

If you wish to modify the NATTIAM parameters, edit and reassemble the Natural TIAM driver source ANRTFRNT using Job I070.

Natural UTM Driver

The following requirements concerning the Natural UTM driver (ANUTFRNT) must be satisfied:

Requirements	Description
ADACALL=name	Recommended (not NO)
CDYNAM=10	Minimum value
CURPRO=ON	This is the default
PFK=KN	Recommended if all connected terminals are type 9756 or above.
PFK=KS	Recommended in all other cases.

See also the section Setting the Dynamic Natural Parameters.

If you wish to modify the NATUTM parameters, edit and reassemble the Natural UTM driver source ANUTFRNT using Job I070.

Step 6: Modifying the Online Natural Parameter Module

Check the NATPARM module to see if it contains the following definitions. If not, add them:

Definitions	Description
SSIZE=64	Editor area.
ASIZE=50	Entire System Server area also required for IDB.
DATSIZE=56	Recommended size of Local Data Buffer; minimum size required is 48.
CDYNAM=10	Minimum value.
CSTATIC=(... , NATPM, ...)	Optional setting. Required only if Incore Database applications make use of Natural's inverse direction display facility (for example, for use in Middle Eastern countries) (see Natural ISPF Administration Documentation, Section User Exits).
SYNERR=ON	Trap syntax errors.
MAXCL=0	Recommended.
MADIO=0	Recommended.
LE=OFF	Limit error (see **Natural Administrator's Documentation** for details).
RECAT=OFF	To allow stow of macros.
NTPRINT=(...)	Define at least Printers 1 and 2 (see Natural Operations Documentation). Note that if no printer can be accessed, the functions WORKPOOL and BROWSE-VIEW are not available.
NTWORK(5,7),AM=PC,OPEN=ACC,CLOSE=CMD or NTWORK(5,7),AM=PC	
NTFILE ID=186,DBID=n,FNR=m	Definition of container file. If a VSAM container file is used, PASSW=ISPC must be added to this statement.
NTFILE ID=205,DBID=n,FNR=m, PASSW=passw	Definition of versioning file. Required if Adabas versioning file is to be password-protected or a VSAM versioning file is used. If VSAM, specify PASSW=ISPV.
NTDB PROCESS,148 *	Mandatory Entire System Server node.
NTDB INCORE,147 *	Definition of incore database **

***** These definitions are required**, only** if the Entire System Server (formerly Natural Process) is installed. Note also that the NTDB definitions must always be at the end of the NATPARM module. It is important that even if your Entire System Server default node ID is different from 148, the entry, NTDB PROCESS 148, has to remain unchanged here.

****** All Incore Database examples use this DBID. If 147 cannot be used at your site, all Incore Database DDMs (ISP-IDB*) must be recataloged with the new value specified here. All Incore Database example programs (IDB* and VER* in the example library) must also be recataloged accordingly.

If the specified SSIZE value is not available when Natural ISPF is invoked, no Natural ISPF command is accepted (the message Invalid command appears). If this happens, check whether SSIZE is available using the Natural command BUS.

Notes:

1. If the IMPORT/EXPORT PC functions are to be used with Entire Connection (formerly Natural Connection), Workfile 7 must be assigned to PC or PC3 (for example, NTWORK (7),AM=PC for Natural 3.1). The default Workfile 7 can be modified (see the description of the Import/Export Exits in the Natural ISPF Administration Documentation, Section User Exits).
2. Use the NTPRINT macro to define at least Printers 1 and 2 (see the Natural Installation and Operations Documentation).
   - If you specify NTPRINT (1,2),AM=OFF or the equivalent PRINT=OFF, the WORKPOOL and BROWSE-VIEW functions are not available. Of course, you can also specify the printer definitions online using the PRINT parameter which can complement or override the NTPRINT definitions.
   - You can specify any access method of your choice, but when using Natural ISPF in an online environment, you should specify the options OPEN=ACC, CLOSE=OBJ (it may be acceptable for batch environments to use the options OPEN=INIT, CLOSE=FIN).

For OS/390, VSE/ESA, BS2000/OSD - Job I080

Reassemble and link the NATPARM module when modified (JCL is contained in member NATI080 in the Natural installation job library).

For CMS

Enter the commands:

```
GLOBAL MACLIB NATnnn
  ASSEMBLE NATPARM
```

where *nnn* stands for the appropriate Natural version.

Step 7: Modifying Natural VSAM Parameters

Note:
Only required if Natural VSAM system files are used.

Set parameter KEYLGH in macro NVSPARM to 126. Then reassemble and link the macro using Job NVSI055, Steps 1400 and 1401. This job can be found in library NATnnn.JOBS or NVSnnn.JOBS.

Step 8: Assembling the Parameter Modules for the ESX Component

Please refer to the Section Installing the Entire Systems Server Interface in the Natural Installation Guide for Mainframes to install the ESX component. It is part of the Natural nucleus.

Step 9: Linking the Gateway Modules for the ESX Component

Please refer to Section Installing the Entire Systems Server Interface in the Natural Installation Guide for Mainframes to install the ESX component. It is part of the Natural nucleus.

Step 10: Relinking Natural with Natural ISPF

Natural ISPF under OS/390, VSE/ESA or BS2000/OSD

Please refer to the Section Installing the Entire Systems Server Interface in the Natural Installation Guide for Mainframes to install the ESX component. It is part of the Natural nucleus.

Natural ISPF itself needs in addition to the ESX installation an include statement which is a utility for TSO and Batch nuclei only. Enter a statement in your link job, where the syntax depends on the needs of your operating system:

```
INCLUDE ISPURT1
```

Modules required if Natural VSAM system files are used (from Natural VSAM library):

Link Job	Description
INCLUDE NVSPARM	Natural VSAM parameter (see Step 7)
INCLUDE NVSISPV	Natural VSAM versioning file access
INCLUDE NVSLIB	Natural VSAM container file access

Note:
If you are using a shared Natural nucleus, all modules can be linked to the shared nucleus.

Natural ISPF under VM/CMS

Assuming your ESX modules are in a library called NATLIB, and the Natural ISPF load library is referenced by ISPLIB, modify the variable LOADLIST in NAT$LOAD EXEC to include the following modules:

Library	Module	Explanation
ISPLIB	ISPURT1	Utility.

Modules required from Entire System Server Interface:

Library	Module	Explanation
NATLIB	NATPNIP	Entire System Server Interface parameters
NATLIB	ESXNUC *	ESX nucleus

Step 11: Loading / Migrating the Natural ISPF Versions File

The Natural ISPF versions file is used to store "update decks" for edited Natural members, PDS members and VSE/ESA members. This means that if versioning is active, previous versions of these object types are kept when selected for editing and can be retrieved.

Note:
For Natural objects: this applies only to objects that are maintained using the Software AG Editor, that is, maps and data area objects cannot use versioning.

You can use an Adabas file or a VSAM file as versions file.

Loading a Versions File

Follow these instructions if you do not yet have a versions file. If you already have one, skip to Migrating a Versions File.

Adabas Versions File

Load the empty Natural ISPF versioning file (data set ISPnnn.SYS1) using the ADALOD utility. This file was created with Adabas Version 6. All versioning data is stored in this file. The ADALOD parameter ISNREUSE must be set to YES:

```
ISNREUSE=YES
```

The file number of the versions file can be freely chosen and must be entered in the Natural ISPF parameter screen of the configuration option.
See the Natural ISPF Administration Documentation, Section System Configuration, subsection Natural ISPF Parameters.

If the versions file is to be protected by an Adabas password, the password must be defined to Natural using the following NTFILE macro:

```
NTFILE ID=205,DBID=n,FNR=m,PASSW=password
```

If you use this option, the definition in the Natural ISPF parameters is ignored.

For OS/390, VSE/ESA, BS2000/OSD - Job I050 step 2000

Additional parameters can be found in Job I050, Step 2000.

For CMS

Additional parameters can be found in ISP23SY1 LODLIB.

VSAM Versions File - OS/390 and VSE/ESA only

1. Add the following statement to the Natural parameter module:

   ```
   NTFILE ID=205,DBID=n,FNR=m,PASSW=ISPV
   ```

   where:
   n is any VSAM DBID
   m is any number
   ISPV is DD(FCT,DLBL) name of the VSAM file.

2. The module NVSISPV must be linked to the Natural for VSAM nucleus.

   If you wish to use a VSAM file as versions file, sample JCL for defining the VSAM cluster can be found in Job I008, Step 2000.

3. Natural for VSAM parameter KEYLGH must be set to 126 (minimum value).
4. The file must be initialized by loading the dataset ISPnnn.VINI with VSAM repro.
   See Job I008, Step 2001.

Under CICS

If you are defining a VSAM versions file under CICS, add an FCT entry. For an example, see Job I005, Step 2203.

Under Com-plete

If you are defining a VSAM versions file under Com-plete, catalog the VSAM versions file as follows:

- Under Com-plete 4.5, use the FM function of the UUTIL utility, and add the card:

```
DDN=ISPV,VS,R,U,A,MACR=(SEQ,DIR,KEY,SKP,NSR),MRPL=8
```

- Under Com-plete 4.6 and higher, use the CA function of the UFILE utility, and add the card:

```
DDN=ISPV,VS,R,U,A,MACR=(SEQ,DIR,KEY,SKP,NSR),MRPL=8
```

  You must also add the appropriate DD cards to the Com-plete startup procedure. For example:

```
ISPV  DD  SAGLIB.VSAM.ISPVERS,DISP=SHR
```

Under TSO

If you are defining a VSAM versions file under TSO, add the following statement to your CLIST for Natural:

```
ALLOC F(ISPV) DA('SAGLIB.VSAM.ISPVERS') SHR
```

Migrating a Versions File

An existing versions file that has been used by a Natural ISPF version lower than 2.3.1 (even by Version 2.3.0) has to be migrated to the new record format. This can be done by SMA Job I200, Step 2005 for operating systems OS/390, VSE/ESA and BS2000/OSD (for CMS, use ISPFMIG EXEC). This job runs the program ISPFMIG which is located in library SYSISPI. Specify the database and file numbers of your versions file as parameters in these example jobs. For VSAM version files, do not forget to add the DD statement in your migration job.

ISPFMIG can also be started in online mode. However, in this case the program checks only the specified versions file for old records and does not translate these records into the new logical structure. To execute the check for old records, logon to SYSISPI and type ISPFMIG in the Natural command line. Or type NAT ISPFMIG in the Natural ISPF command line.

The program ISPFMIG will temporarily change the LFILE definition to check the file. You can restart this utility in batch mode without loss of data. Old records will be converted into the new format within your versions file. Do not use copies of this file with existing version data. Any versioned SAVEs accessing the wrong versions file will cause version mismatches and loss of some versions. Instead, for backup reasons unload your Adabas versions file to a sequential dataset or copy your VSAM versions file before executing this utility. Restore it only in case of ISPFMIG migration errors. If you receive Adabas Response Code 47 during migration, parameter NISNHQ (Adabas cards) should be set to NISNHQ=60.

If you intend to use two or more different environments running different versions of Natural ISPF, you should keep the following in mind:

- If two environments provide access to identical data (for example, FUSER and FNAT files or PDS libraries), they should share a common versions file.
- After migration, it is impossible to access member versions from an environment using the old program logic, as contained in releases of Natural ISPF lower than 2.3.1. However, you can enable such an environment to access the migrated versions file:

Natural ISPF 2.3.1 supplies a subprogram ISP-TVKN in the SYSISPI library. To access a new versions file from an environment running Natural ISPF 2.1.x, use SYSMAIN to copy the module to the SYSLIB library in which Natural ISPF 2.1.x is installed.

Notes:

1. After copying, it is no longer possible to access an old versions file.
2. If you intend to switch between the old and the new access method, remember to save the old ISP-TVKN module in SYSLIB, otherwise you will have to restore the old module.

ISPFMIG displays the following startup screen:

```
                    ********************************
                      *  N S P F    MIGRATION       *
                      *  2. 4. 2    UTILTY          *
                      ********************************

 Migrates versioning file from earlier format to Version 2.4 format.
 This utility can only be started in batch mode. Running online it will
 check the versioning file for old records only. No FDT changes are required.

 You can restart this utility in batch mode without loss of data. Old records
 will be converted into the new format within your versioning file. Don't use
 copies of this file with existing versioning data. Any versioned SAVEs
 accessing the wrong versions file will cause version mismatches and loss of
 some versions. Instead, unload your versioning file to a sequential dataset
 before executing this utility and reload it in case of errors.

 After migration it is impossible to access member versions from ISP earlier
 than 2.3.1. However, it is possible to access the data from ISP21x, just apply
 the solution shipped with ISP242.

 Versioning file DBID:        File number:           Old records:

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  END
```

Enter the database and file numbers of your versions file. ISPFMIG will show the number of old records. After pressing PF3, the original settings of the versions file are restored.

Note:
If you interrupt the program (for instance by typing the Natural terminal command "%%") be aware that the current input of dbid / file number has been changed. In this case, you should re-initialize the Natural ISPF session.

Step 12: Loading the Natural ISPF Container File

The Natural ISPF container file can be used to store Incore Database Files, which can then be retrieved and manipulated in the Incore Database.

You can use an Adabas file or a VSAM file as container file.

Adabas Container File

Omit this step if you already have a Natural ISPF container file.

Load the empty Natural ISPF container file (data set ISPnnn.SYS2) using the ADALOD utility. This file was created with Adabas Version 6. All Incore Database data is stored in this file. The ADALOD parameter ISNREUSE must be set to YES:

```
ISNREUSE=YES
```

The file number of the container file can be freely chosen and must be defined using the NTFILE parameter in the NATPARM module.

If the container file is to be protected by an Adabas password, the password must be defined to Natural using the following NTFILE macro:

```
NTFILE ID=186,DBID=n,FNR=m,PASSW=password
```

For OS/390, VSE/ESA, BS2000/OSD - Job I050 Step 2001

Additional parameters can be found in Job I050, Step 2001.

For CMS

Additional parameters can be found in ISP24SY2 LODLIB.

VSAM Container File - OS/390 and VSE/ESA only

Under Natural for VSAM (NVS) 2.3.1 and 2.3.2, you must apply zap NV31008. If you already have a VSAM container file from a previous version of Natural ISPF, omit the steps described below.

1. Add the following statement to the Natural parameter module:

   ```
   NTFILE ID=186,DBID=n,FNR=m,PASSW=ISPC
   ```

   where:
   n is any VSAM DBID
   m is any number
   ISPC is DD(FCT,DLBL) name of the VSAM file.

2. The module NVSISPC must be linked to the Natural for VSAM nucleus.

   Sample JCL for defining the VSAM cluster can be found in Job I008, Step 2002.

3. Natural for VSAM parameter KEYLGH must be set to 126 (minimum value).
4. The file must be initialized by loading the dataset ISPnnn.VINI with VSAM repro.
   See Job I008, Step 2003.

Under CICS

If you are defining a VSAM container file under CICS, add an FCT entry. For an example, see Job I005, Step 2203.

Under Com-plete

If you are defining a VSAM container file under Com-plete, catalog the VSAM container file as follows:

- Under Com-plete 4.5, use the FM function of the UUTIL utility, and add the card:

  ```
  DDN=ISPC,VS,R,U,A,MACR=(SEQ,DIR,KEY,SKP,NSR),MRPL=8
  ```

- Under Com-plete 4.6 and higher, use the CA function of the UFILE utility, and add the card:

```
DDN=ISPC,VS,R,U,A,MACR=(SEQ,DIR,KEY,SKP,NSR),MRPL=8
```

You must also add the appropriate DD cards to the Com-plete startup procedure. For example:

```
ISPC  DD  SAGLIB.VSAM.ISPCONT,DISP=SHR
```

Under TSO

If you are defining a VSAM container file under TSO, add the following statement to your CLIST for Natural:

```
ALLOC F(ISPC) DA('SAGLIB.VSAM.ISPCONT') SHR
```

Step 13: Natural Security Definitions

Note:
This step applies only if Natural Security is installed at your site.

All security entries for applications and files are made automatically. The entries are not protected and may thus require appropriate modification by the system administrator.

1. Define the applications:

Application	Description
SYSISPS1*	Natural ISPF Internal tables / menus
SYSISPH1*	Natural ISPF Help data
SYSISPFU*	Natural ISPF User menus / tables
SYSISPDB	Natural ISPF Incore Database modules
SYSISPHU*	Natural ISPF User-defined help
SYSISPIU*	Natural ISPF User-defined information (UINFO)
SYSISPX*	Natural ISPF User Exit sources
SYSISPXC*	Natural ISPF Example User Exits for Com-plete
SYSISPXU*	Natural ISPF User-modified exit sources
SYSISPE	Natural ISPF Example library
SYSISPI	Natural ISPF Interfaces

Note:
All libraries ending with **U** are empty, as they are to be used for customized menus and site-specific help and online information. The content of all other libraries is supplied by Software AG.

* To increase security, the applications marked with an asterisk ***** should be defined as people-protected (private) and be linked to the system administrator. Startup programs and error transactions must not be defined, and all applications should allow REPORT mode.

2. Define the following files in Natural Security as public :


```
ISP-IDB-ADRESSEN
  ISP-IDB-CLASS
  ISP-IDB-DIRECTORY
  ISP-IDB-EMPL-LIST
  ISP-IDB-EMPLOYEES
  ISP-IDB-INCOME
  ISP-IDB-MUSIC
  ISP-IDB-NPRUSER
  ISP-IDB-TEXT
  ISP-IDB-MOVIES
  ISP-IDB-PERSON
  ISP-IDB-MENU-LINES
  ISP-IDB-MENU-CMDS
  ISP-IDB-TIMER
```

These files are used in Incore Database examples.

3. From the Natural Security Administrator Services Menu, select code **G** (General Options) and set the field Free access to functions via interface subprograms to value **Y**.

Step 14: Required Interfaces to other Software AG Products

Library SYSISPI contains some interface programs to other Software AG products. Execute program INSTALL from this library to ensure that all required interface programs are installed properly.

The INSTALL program makes sure that all required interface programs are installed properly by copying them from the library SYSISPI to SYSLIB and/or SYSLIBS. In addition INSTALL copies your user exits from the user exit library to SYSLIB, thus ensuring that Natural ISPF will not be invoked without your user exits being active.

Before executing the program INSTALL in a Natural Security environment, be sure that the prerequisites mentioned in Note 1 (see below) are fulfilled.

The following screen will be displayed by INSTALL, fill in the input fields and press PF5 to start execution:

```
Please fill in fields and press PF5 to start
   13:34:38                  N A T U R A L   I S P F              99-05-31
                              Installation Program

   Installation environment
     Natural version  ... FNAT DB     ... FNR    ...
     PREDICT version  ...
     Natural security ...

   Installation parameters
     Enter printer to trace activities. . . . .  :
     Copy user exits from library . . . . . .  :   SYSISPXU
     Copy user profiles from file number  . . .  :      ...
     Are you upgrading from ISP14x ? (Y/N). . .  :   N
     Do you want N-ISPF to be the only
     user interface (no MAINMENU any more) (Y/N) :   N









  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                    END         OK
```

The meaning of the input fields:

Field	Meaning
Printer to trace activities	The Natural utility SYSMAIN is used for copying interface programs and user exits. If you want to trace the generated SYSMAIN commands, enter a printer name in this field.
Copy user exits from library	If you want INSTALL to copy your user exits to SYSLIB, enter the name of the library where your exits are stored. If this field is blank, before starting execution, INSTALL displays a warning that no exits will be copied. **Note:** If you are installing Natural ISPF for the first time, delete the default value and set this field to **blank**.
Are you upgrading from ISP14x? (Y/N)	Enter **N** if you are upgrading from Version 2.1.1 or higher, or if you are performing an initial installation.
Do you want Natural ISPF to be the only user interface (no longer using MAINMENU)? (Y/N)	Use default **N** if you want to keep MAINMENU active. **Y** replaces MAINMENU with the Natural ISPF user interface.
Have exits been migrated to version 2.1.x conventions at least? (Y/N)	If you are migrating from a version **lower than 2.1.1**: Since the parameters for some of the user exits have changed, confirm that your user exits have been modified as described in the section Migrating from Previous Versions. Copying exits with old parameter lists **results in serious run time errors**.

Depending on the version of the products installed, the following programs will be copied to SYSLIB and/or SYSLIBS:

Program	Description
NSCX*	Natural Security interface subprograms
SAT*	System Automation Tools subprogram
IS-NCP-*	Default command processors for Natural ISPF
NSPF	For Natural ISPF *

***** Last program to be copied, used for verification of successful execution of the INSTALL program.

Important:
The INSTALL program must be executed after every INPL of Natural and/or Natural Security.

Notes:

1. Before executing the INSTALL program, check whether the libraries SYSISPFU, SYSISPS1, SYSLIB and SYSLIBS are defined in Natural Security, and verify that you are authorized to access them.
2. All user exits are copied to SYSLIB (members IS* from SYSISPX or from the library specified in the screen above).
3. If the FNAT system file is protected by an Adabas password, INSTALL prompts for the password.
   If the FNAT system file resides in a VSAM file, INSTALL prompts for the FNAT name as defined in the NATPARM parameter module.
4. Some of the copy operations performed during execution of the INSTALL program are done as 'copy without replacement'. For this reason, any NAT4810 messages reported during execution of the INSTALL program are normal and can be ignored.
5. If the INSTALL program has not executed successfully, Natural ISPF cannot be started.

Step 15: Optional Interfaces to Software AG Products

Con-nect Application Programming Interface

If you intend to transfer files to and from Con-nect, or if you want to activate the Con-nect subsystem of Natural ISPF, the application programming interface must be copied: you must copy all objects starting with **Z** from the library SYSCNT2 to the library SYSLIBS.

Notes:

1. The Con-nect system file must be assigned to a physical database file.
2. Library SYSLIB may also contain old programs beginning with **Z** from previous installations. All these interface programs must be deleted to ensure that Natural ISPF calls the newest versions.

Extended Natural / USPOOL Interface under Com-plete

If you are installing Natural ISPF under Software AG's TP-Monitor Com-plete, you also have the option of installing the extended Natural / USPOOL interface. This interface enables Natural ISPF users to use logical printer drivers defined in Com-plete, when printing Natural ISPF objects. If you choose not to install this interface, it is still possible to route Natural ISPF printouts to printing devices defined within Com-plete, but users will not be able to use logical printer drivers.

No specific installation steps are required. It is sufficient to activate the USPOOL interface by setting APPLYMOD 22, as described in the Natural ISPF Administration Documentation.

Step 16: CA-LIBRARIAN Interface - OS/390 only

To activate the CA-LIBRARIAN interface, you must assemble and link the Entire System Server (formerly Natural Process) module NATPAML into the Entire System Server load library. For instructions, refer to the section Installation in the Entire System Server documentation.

Step 17: Setting the Dynamic Natural Parameters - BS2000/OSD only

Many Natural ISPF functions are cursor-sensitive. If you wish to make use of this comfortable mode of operation, you must select appropriate parameter settings to suit your terminal equipment.

Terminal Type 9756 and Equivalent PC Emulations

1. For type 9756 terminals and for equivalent PC terminal emulations that are capable of the key codes F1 to F20, it is recommended that you use the new Siemens key logic (%KN), as this enables cursor-sensitive use of function keys, which makes optimal use of Natural ISPF functionality.
2. It is also recommended that you use CURPRO=OFF (that is, %T+), thus enabling the cursor to be moved to protected fields: this means you can use the cursor-sensitive form of commands like HELP, POP, BROWSE :C etc., not only in EDIT sessions, but also in BROWSE and LIST sessions.

Terminal Types 9750 and 9755

For Type 9750 and 9755 terminals, it is recommended that you use standard Siemens key logic (%KS), even if this means that function keys cannot be used in a cursor-sensitive way.

In this mode, cursor-sensitive functions can only be used by typing the appropriate command (for example, BR :C) into the command line.

Especially the Editor commands RFIND and RCHANGE should then be used in conjunction with the command redisplay feature to allow successive scanning for all occurrences of a search string in an Editor session. To do so, proceed as in the following example:

- enter a FIND command as normal, causing the cursor to be placed on the first occurrence of the search string;
- type &RFIND in the command line and press ENTER; the cursor is again placed on the first occurrence, and the command stays in the command line until it is erased from there;
- successive pressing of the ENTER key causes the cursor to be placed on further occurrences of the search string.

The command &RCHANGE can be used in the same way.

When you are working with %KS, you might prefer the default cursor protection setting (CURPRO=ON, that is, %T-) if you are used to this mode.

Mixed Terminal Types

If your site uses different terminal types, you should not use the Natural TIAM / UTM driver to set these parameters (see the section Modifying Natural Front-end Modules). Instead, it is recommended that you control these session parameters via the LOGON user exit of Natural ISPF. An example of this technique can be found in library SYSISPE, member ISP-LONU (see also the section User Exits in the Natural ISPF Administration Documentation, as well as the online documentation of the user exit).

Step 18: Starting Natural ISPF for the First Time

Note:
If you are using the Natural ISPF user interface, you can omit this step.

To start Natural ISPF, enter the command:

```
SPF
```

in the command line of your Natural session. This displays the Natural ISPF main menu on your terminal screen. Select the ADMIN (Administrator Functions) option from the Main Menu. The Administrator Menu appears.

All available administrator functions are described in the Natural ISPF Administration Documentation.

Step 19: Installation Verification

To verify whether the installation of Natural ISPF was successful, issue the following commands in the Natural ISPF Main Menu:

```
LOGON SYSISPE
  PLAY MAC VERIFY
```

This starts a Natural ISPF command script which guides you through a test cycle of various Natural ISPF functions. First, a help screen appears that tells you how to control the test run and which components are tested. Press PF3 to continue; the next screen is the output of the Natural ISPF TECH command.

Step 20: Moving Incore Database Applications to Production Environment

To move Incore Database applications to your production environment, proceed as follows:

1. Repeat all steps in this installation except the following:
   - Do not load the Natural ISPF INPL dataset.
   - Do not load the Natural ISPF versions file.
   - Natural Security definitions are not required.
   - Do not execute the Natural ISPF INSTALL program.
   - Neither the Con-nect interface nor the USPOOL and CA-LIBRARIAN interfaces are required.
2. Use SYSMAIN to copy all objects from SYSISPDB to SYSTEM (or another STEPLIB of the application that uses the CALLNAT interface) in the production environment, or define SYSISPDB as STEPLIB for your application.
3. If an explicit creation of an incore file is used in your application, you also need the file (DDM) in your production environment. Use SYSMAIN to copy it.
4. Define library SYSLIBS as steplib for your Incore Database applications.

